

Forklift Alternators and Starters

Forklift Alternators and Starters - A starter motor today is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid installed on it. As soon as current from the starting battery is applied to the solenoid, mainly through a key-operated switch, the solenoid engages a lever which pushes out the drive pinion which is situated on the driveshaft and meshes the pinion with the starter ring gear which is found on the flywheel of the engine.

The solenoid closes the high-current contacts for the starter motor, which starts to turn. When the engine starts, the key operated switch is opened and a spring inside the solenoid assembly pulls the pinion gear away from the ring gear. This particular action causes the starter motor to stop. The starter's pinion is clutched to its driveshaft by an overrunning clutch. This permits the pinion to transmit drive in only one direction. Drive is transmitted in this way through the pinion to the flywheel ring gear. The pinion remains engaged, like for example as the operator did not release the key as soon as the engine starts or if the solenoid remains engaged since there is a short. This actually causes the pinion to spin separately of its driveshaft.

This aforementioned action prevents the engine from driving the starter. This is an important step in view of the fact that this particular type of back drive will enable the starter to spin so fast that it would fly apart. Unless modifications were done, the sprag clutch arrangement will prevent making use of the starter as a generator if it was used in the hybrid scheme discussed prior. Normally an average starter motor is meant for intermittent use that would prevent it being used as a generator.

The electrical parts are made so as to function for about thirty seconds so as to avoid overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are designed to save weight and cost. This is truly the reason the majority of owner's manuals intended for vehicles suggest the driver to pause for a minimum of 10 seconds right after every 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over at once.

During the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Previous to that time, a Bendix drive was used. The Bendix system works by placing the starter drive pinion on a helically cut driveshaft. As soon as the starter motor starts turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, hence engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear enables the pinion to surpass the rotating speed of the starter. At this instant, the drive pinion is forced back down the helical shaft and thus out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design which was made and launched in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights in the body of the drive unit. This was an enhancement for the reason that the standard Bendix drive utilized in order to disengage from the ring as soon as the engine fired, though it did not stay functioning.

The drive unit is forced forward by inertia on the helical shaft as soon as the starter motor is engaged and starts turning. After that the starter motor becomes latched into the engaged position. Once the drive unit is spun at a speed higher than what is achieved by the starter motor itself, like for instance it is backdriven by the running engine, and afterward the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be prevented before a successful engine start.